

Title (en)
METHOD FOR PRODUCING STRETCHABLE SHEET

Title (de)
VERFAHREN ZUR HERSTELLUNG EINER DEHNBAREN FOLIE

Title (fr)
PROCÉDÉ DE PRODUCTION DE FEUILLE ÉTIRABLE

Publication
EP 3251646 B1 20210113 (EN)

Application
EP 16743585 A 20160129

Priority

- JP 2015017498 A 20150130
- JP 2015067324 A 20150327
- JP 2015067325 A 20150327
- JP 2015068068 A 20150330
- JP 2015070295 A 20150330
- JP 2015195462 A 20150930
- JP 2015220312 A 20151110
- JP 2016052812 W 20160129

Abstract (en)
[origin: EP3251646A1] To acquire a stretchable sheet having air permeability due to the presence of through-holes, with no hole formed through outer layers. There are provided: interposing a resilient film (30) that stretches and contracts, in a stretched state between a first sheet layer (21) having no elasticity and a second sheet layer (22) having no elasticity; and joining the first sheet layer (21) and the second sheet layer (22) together with a number of joints directly or through the resilient film 30 by melting the resilient film (30) with ultrasonic fusion energy applied by a thermal fusion device from the outside of the first sheet layer (21) and the outside of the second sheet layer (22) to a number of joint regions with intervals, during the interposing. A through-hole (31) is formed through at least a boundary portion in a direction of the stretching between the resilient film (30) and each of joints (40), with the first sheet layer (21) and the second sheet layer (22) retained, no hole being formed over the entirety of each of the joint regions.

IPC 8 full level
A61F 13/15 (2006.01); **A61F 13/49** (2006.01); **A61F 13/496** (2006.01)

CPC (source: EP KR US)
A61F 13/15 (2013.01 - EP US); **A61F 13/15699** (2013.01 - KR US); **A61F 13/15723** (2013.01 - KR); **A61F 13/49** (2013.01 - EP US); **A61F 13/49011** (2013.01 - KR); **A61F 13/4902** (2013.01 - KR); **A61F 13/496** (2013.01 - EP KR US); **A61F 13/5123** (2013.01 - KR); **B29C 65/086** (2013.01 - EP); **B29C 66/1122** (2013.01 - EP); **B29C 66/21** (2013.01 - EP); **B29C 66/41** (2013.01 - EP); **B29C 66/433** (2013.01 - EP); **B29C 66/7294** (2013.01 - EP); **B29C 66/81429** (2013.01 - EP); **B29C 66/81433** (2013.01 - EP); **B29C 66/83413** (2013.01 - EP); **B29C 66/83511** (2013.01 - EP); **A61F 2013/15886** (2013.01 - KR); **B29C 66/7294** (2013.01 - US); **B29C 66/83415** (2013.01 - EP); **B29L 2031/4878** (2013.01 - EP); **B32B 37/144** (2013.01 - US)

Citation (opposition)
Opponent : Essity Hygiene and Health AB

- WO 2008026106 A2 20080306 - KIMBERLY CLARK CO [US], et al
- EP 0274752 A2 19880720 - KIMBERLY CLARK CO [US]
- WO 03000165 A1 20030103 - PROCTER & GAMBLE [US]
- EP 2223796 A1 20100901 - TREDEGAR FILM PROD CORP [US]
- US 4842596 A 19890627 - KIELPIKOWSKI DAVID P [US], et al
- US 2010112313 A1 20100506 - NAKAKADO MASAKI [JP]
- EP 0685586 A2 19951206 - INT PAPER CO [US]
- US 2012038088 A1 20120216 - LEHTO MARCUS [SE]
- US 4414045 A 19831108 - WANG KENNETH Y [US], et al
- US 5591298 A 19970107 - GOODMAN STEVEN L [US], et al
- WO 9614191 A1 19960517 - MINNESOTA MINING & MFG [US]
- US 5567501 A 19961022 - SRINIVASAN RAMESH [US], et al
- WO 2012036600 A1 20120322 - SCA HYGIENE PROD AB [SE], et al
- WO 2012036599 A1 20120322 - SCA HYGIENE PROD AB [SE], et al
- JP 2008142341 A 20080626 - KAO CORP
- WO 2013002691 A1 20130103 - SCA HYGIENE PROD AB [SE], et al
- MOA: "Studies on the Process of Ultrasonic Bonding of Nonwovens: Part 1 - Theoretical Analysis", INTERNATIONAL NONWOVENS JOURNAL, vol. 10, no. 2, 1 January 2001 (2001-01-01), pages 38 - 47, XP093071259

Opponent : Mondi AG,

- WO 2015168032 A1 20151105 - 3M INNOVATIVE PROPERTIES CO [US]
- EP 1355604 B1 20090805 - FAMECCANICA DATA SPA [IT]
- EP 2064052 B1 20111026 - KIMBERLY CLARK CO [US]
- WO 2013002691 A1 20130103 - SCA HYGIENE PROD AB [SE], et al
- WO 9411189 A2 19940526 - AMOCO FABRICS [DE], et al
- EP 0685586 A2 19951206 - INT PAPER CO [US]
- WO 2012036599 A1 20120322 - SCA HYGIENE PROD AB [SE], et al

Cited by
CN114633527A; EP4253033A1

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

EP 3251646 A1 20171206; EP 3251646 A4 20180718; EP 3251646 B1 20210113; CN 107205856 A 20170926; CN 107205856 B 20200703;
KR 102506117 B1 20230303; KR 20170110607 A 20171011; US 10517770 B2 20191231; US 2018014979 A1 20180118;
WO 2016121982 A1 20160804

DOCDB simple family (application)

EP 16743585 A 20160129; CN 201680006182 A 20160129; JP 2016052812 W 20160129; KR 20177021288 A 20160129;
US 201615546175 A 20160129